



CAROLYN CANTY

VANADIUM

Element Symbol: **V**

Atomic Number: **23**

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Vanadium is named after the Scandinavian goddess, Vanadis (due to its beautiful multi-coloured compounds). Pure vanadium is a bright white metal, soft and ductile.

Vanadium was first discovered by del Rio 1801, a Mexican, who sent details of his discovery to the Institute de France in Paris, France, for analysis and confirmation. Perhaps his statement that it resembled chromium was an error of judgment since his discovery was challenged by a French chemist. Maybe vanadium, being next to chromium in the periodic table, lead to speculation that it was an impure form of chromium. The element was rediscovered in 1830 by Sefström, who named it as it is known today.

Isolated in near-pure form by Roscoe in 1867. However, high purity vanadium was not prepared in quantity until 1927, at 99.3-99.8% purity.

The Atlantic subsidiary Midwest Vanadium, is evidently continuing construction of the Windimurra Vanadium project, which was 85 per cent complete when previous owner Windimurra Vanadium ran out of cash and fell into administration and receivership in February 2009.

There has been a suggestion that if China is to lift the quality of its steel production, to that of some of its competitors, then a significant market for vanadium would result, due to the improved performance of Vanadium steels.

Vanadium also found in phosphate rocks, some iron ores, and interestingly in some crude oils where it is present as organic complexes (this is especially in Venezuelan oils – e.g. in the Maracaibo Basin). These are mainly in the form of porphyrins, and the unusual thing is that the porphyrins (which derive from chlorophyll and so this is evidence of an ‘organic source’ for oil, as opposed to the earlier belief that oil was a ‘mineral’) in crude oil can be complexed with metals – but are almost exclusively the Nickel and Vanadium complexes. I am not sure if it is really known why only nickel and vanadium form these complexes in oils. There should be other metals – e.g. iron – that could also form such compounds but they are not found.

Because the porphyrins are red in colour, and oils can occur in shades etc., it has been stated that “You CAN get blood from a stone”

Mixed with aluminium in titanium alloys, vanadium is used in jet engines and high speed air-frames, and steel alloys are used in axles, crankshafts, gears and other critical components. In biology, a vanadium atom is an essential component of some enzymes, particularly the vanadium nitrogenase used by some nitrogen-fixing microorganisms

The uptake of vanadium by humans mainly takes place through foodstuffs, such as buckwheat, soya beans, olive oil, sunflower oil, apples and eggs.

Provided by the element sponsor sponsor Phil Marriot

ARTISTS DESCRIPTION

My element Vanadium, stirred in my memory a connection long past. As a new potter many years ago, I sought a particular yellow glaze that was bright at stoneware temperatures, around 1300°C. After some research I found vanadium pentoxide. My depiction of the element vanadium reflects this early connection in my career as potter and more recently printmaker.

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